

THE CLAIMS

I claim:

- 1 1. A method for manufacturing an electrolytic tilt sensor, comprising the steps of:
 - 2 forming first and second sensing electrodes on a generally planar surface of a dielectric substrate;
 - 3 forming a reference electrode on said generally planar surface;
 - 4 mounting a housing to said dielectric substrate so that said first and second sensing electrodes
 - 5 and said reference electrode are contiguous to a volume defined between said housing and said
 - 6 dielectric substrate;
- 7 forming a fluid tight seal between said housing and said dielectric substrate;
- 8 injecting an electrolytic fluid into said volume;
- 9 sealing said electrolytic fluid in said volume; and
- 10 forming an electrical circuit on said dielectric substrate for generating an output signal

11 representing an angular position of said dielectric substrate with respect to a gravitational field,
12 wherein said electrical circuit includes an oscillator mounted on said planar surface.

1 2. The method of claim 1 further including the step of:

2 forming a via through said dielectric substrate, and wherein the step of injecting includes
3 injecting said electrolytic fluid through said via into said volume, and the step of sealing includes
4 sealing said via.

1 3. The method of claim 1 wherein said dielectric substrate is a printed circuit board.

1 4. The method of claim 1 further including the step of forming an aperture through said housing,
2 wherein the step of injecting includes injecting said electrolytic fluid through said aperture, and
3 the step of sealing includes sealing said aperture to secure said electrolytic fluid in said volume.

1 5. An electrolytic tilt sensor, comprising:

2 a dielectric substrate having a first planar surface;
3 a first sensing electrode affixed to said dielectric substrate and having a second planar surface

- 4 entirely in contact with said first planar surface;
- 5 a second sensing electrode affixed to said dielectric substrate and having a third planar surface
- 6 entirely in contact with said first planar surface;
- 7 a reference electrode affixed to said dielectric substrate and having a fourth planar surface
- 8 entirely in contact with said first planar surface;
- 9 a housing mounted to said dielectric substrate so that said first and second sensing electrodes and
- 10 said reference electrode are contiguous to a volume defined between said housing and said
- 11 dielectric substrate;
- 12 a fluid tight seal formed between said housing and said dielectric substrate;
- 13 an electrolytic fluid contained within said volume; and
- 14
- 15 electrical circuitry mounted on said dielectric substrate and electrically coupled to said first and

16 second sensing electrodes, and to said reference electrode for generating an electrical signal
17 representing an angular displacement of said electrolytic fluid with respect to said dielectric
18 substrate, wherein said electrical circuitry includes an oscillator mounted on said first planar
19 surface.

1 6. The electrolytic tilt sensor of claim 5 wherein said reference electrode and said first and
2 second sensing electrodes are positioned along an arcuate path, and said reference electrode is
3 interposed between said first and second sensing electrodes.

1 7. A method for manufacturing an electrolytic tilt sensor, comprising the steps of:
2 forming first and second sensing electrodes on a printed circuit board using printed circuit board
3 fabrication techniques;

4 forming a reference electrode on said *printed* circuit board using said printed circuit board
5 fabrication techniques;

6 mounting a housing to said printed circuit board so that said first and second sensing electrodes
7 and said reference electrode are contiguous to a volume defined between said housing and said
8 printed circuit board;

- 9 forming a fluid tight seal between said housing and said printed circuit board;
- 10 injecting an electrolytic fluid into said volume;
- 11 sealing said electrolytic fluid in said volume; and
- 12 forming an electrical circuit having an oscillator on said printed circuit board for generating an output signal representing an angular position of said printed circuit board with respect to a gravitational field.

1 8. The method of claim 7 further including the step of:

- 2 forming a via through said printed circuit board, wherein the step of injecting includes injecting said electrolytic fluid through said via into said volume, and the step of sealing includes sealing said via.
- 1 9. The method of claim 7 further including the step of forming an aperture through said housing, wherein the step of injecting includes injecting said electrolytic fluid through said aperture, and the step of sealing includes sealing said aperture to secure said electrolytic fluid in said volume.